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Mindfulness for Healthcare Providers: The Role of Non-Reactivity in Reducing Stress

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Abstract

Context: There is strong evidence in the literature that the cultivation of mindfulness through programs such as Mindfulness-Based Stress Reduction (MBSR) has a profound impact on perceived stress for healthcare providers. The mechanism of the latter association is still being studied. However, it has been hypothesized that in particular, the cultivation of *non-reactivity as a mindfulness skill may be particularly associated with the salutary effect of MBSR to reduce stress in health care providers even if adjusted for the benefit on quality of life gained after MBSR*. The latter may represent important mechanistic information to build customized mindfulness intervention for health care providers.

Objective: Determine whether the change in *non-reactivity to inner experience after MBSR is associated with the adjusted changes in perceived stress after MBSR*.

Design: a Cross-sectional study.

Setting: A large, Midwestern teaching hospital.

Participants: 100 health care providers.

Intervention: 8-week standard MBSR course.

Main Outcome Measures: Perceived Stress Scale-10, Linear Analog Scale Assessment to measure Quality of life, and the mindfulness domain *non-reactivity to inner experience* was assessed by the non-reactivity subscale of the Five Facet Mindfulness Questionnaire. All measures were administered at baseline and completion of the intervention.

Results: The change from baseline to completion of MBSR was significant for all variables, with moderate-to-robust effect sizes. There was a significant negative correlation between non-reactivity and perceived stress both at baseline ($p < 0.0001$) and when comparing changes in scores

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Conflicts of Interest Statement

The authors report no conflicts of interest.

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from baseline to post-intervention ($p<0.0001$). Change in non-reactivity to inner experience was robustly associated with the change in perceived stress ($p<0.0001$) after MBSR (97% in 5000 bootstrapped models).

Conclusion: Non-reactivity to inner experience is a key aspect of MBSR that is independently associated with a change in perceived stress in health care providers.

Keywords

Mindfulness; Healthcare Providers; MBSR; Non-Reactivity; Perceived Stress

INTRODUCTION

The inverse correlation between stress and happiness is not only intuitive, but it is well supported in the literature.(1, 2) In the context of healthcare providers, the antagonistic effects of stress not only permeate the provider's life, but also carry the potential to negatively impact patient care.(3) Given the intensive nature of working in healthcare, and the high prevalence of healthcare provider burnout,(4) it is imperative to find ways to increase happiness and overall well-being and decrease stress in healthcare providers.

We recently reported a survey of 400 healthcare providers, in which self-compassion was found to be independently associated with perceived happiness (1) and that the mindfulness subscale of the Self Compassion Scale used was predictive of perceived happiness. This further substantiates the link between mindfulness and happiness (5) and highlights the necessity of making programs aimed at improving mindfulness skills, such as Mindfulness-Based Stress Reduction (MBSR), available to healthcare providers.

It is well-established in the literature that increases in trait mindfulness mediate the effect MBSR has on stress,(6, 7) and recent research suggests that *non-reactivity to inner experiences* may be particularly a responsible with the benefits of MBSR.(8) Non-reactivity to inner experiences refers the ability to remain calm and objective in the face of thoughts and feelings that would typically elicit an emotional response; this skill may well be of critical importance to health care providers. Cultivation of non-reactivity through mindfulness training holds the possibility of not only improving healthcare providers' quality of life (QoL), but may also foster improved patient care.(3) The central aim of this study is to determine whether changes in non-reactivity after MBSR) are associated with changes in perceived stress in healthcare providers even after adjusting for potential confounders. The latter may represent important mechanistic information to build customized mindfulness intervention for health care providers.

METHODS

PARTICIPANTS

100 healthy adults enrolled in a work-place MBSR program at a large, Midwestern teaching Hospital. Participants were recruited via advertising at the Dan Abraham Healthy Living Center (Mayo Clinic wellness center). There were no exclusionary criteria for participation. All study procedures were approved by the Mayo Clinic IRB (17000300).

INTERVENTION

Participants completed a standard 8-week MBSR course comprised of eight weekly sessions lasting 150 minutes each, in addition to a day-long silent retreat. Classes consisted of mindfulness practices (the body scan, seated meditation, walking meditation, and hatha yoga), group sharing revolving around the specified weekly theme, and weekly mindfulness practices to be completed as homework. Participants were encouraged to increase their attention to internal experiences, such as thoughts, feelings, and judgments.(9)

MEASURES

The perceived stress scale-10 (PSS) is comprised of 10 questions designed to measure the degree to which situations within the last month have been considered stressful. Items are ranked on a 5-point Likert Scale, with higher scores indicating greater levels of perceived stress.

Quality of Life (QoL) was measured using the *Linear Analog Scale Assessment*, which is a six-item measure with one question about overall quality of life, and the remaining five each aiming to assess the five specific domains related to the quality of life (physical, social, emotional, spiritual, and intellectual). Items are rated on a 10-point Likert Scale, with higher ratings indicating a higher quality of life.

Nonreactivity was measured using the mindfulness domain '*non-reactivity to inner experience*' from the Five Facet Mindfulness Questionnaire. This outcome was chosen because it has been shown in the literature to demonstrate change with mindfulness practice, discriminates between meditators and nonmeditators, and correlates with psychological well-being and because of its relevance to clinical practice.(10) Non reactivity to inner experience has seven items, all rated on a 5-point Likert Scale, with higher scores being indicative of greater non-reactivity.

All measures were administered at baseline and the completion of the MBSR intervention.

DATA ANALYSIS

Changes from baseline were tested using Wilcoxon rank sum tests. These tests were all performed as 2sided tests with 5% type I error rates. Cohen's D effect sizes were calculated by taking the difference between the baseline and post-intervention measurements and dividing by the baseline standard deviation. Variables that change by more than half a standard deviation are considered to be clinically meaningful changes.(11) Linear regression models were used to model the association of the change in perceived stress with the change in non-reactivity to inner experience and the change in overall QoL respectively. All analyses were done using SAS version 12.

RESULTS

Participants improved on all variables from baseline to post-MBSR (table 1), with all improvements representing a clinically meaningful effect size. Perceived stress and non-reactivity to inner experiences improved significantly ($p<0.0001$) from baseline to post-intervention, with robust effect sizes. QoL also improved significantly ($p<0.0001$), with a

moderate effect size. All domains of QoL improved, with the most robust improvement occurring in emotional QoL.

Correlations of perceived stress and non-reactivity at baseline, as well as for change scores computed after completion of MBSR (table 2). There was a significant, negative correlation between perceived stress and non-reactivity at baseline, as well as when comparing the change in scores from baseline to MBSR completion.

A linear regression model (table 3) revealed that the change in non-reactivity (mindfulness of emotions) strongly predicted the change in perceived stress ($p<0.0001$), with 97% of the time in the bootstrapped samples indicating the robustness of the association. While the change in overall QoL was significant in predicting the change in perceived stress, this model spent only 32% of the time in bootstrapped samples indicating a much less robust association.

DISCUSSION

The uniqueness of this report primarily resides in the population studied (healthcare workers), and the finding that : non-reactivity to inner experience (mindfulness of emotions) is independently and robustly associated with improvements in perceived stress after MBSR, a well-validated mindfulness intervention.

Before any intervention, individuals who are less reactive to their inner experience tended to have the least amount of stress and have the highest emotional quality of life. Our results generate the testable hypothesis that by strengthening non-reactivity to emotions a healthcare worker may experience a decrease in perceived stress. The latter is the basis of emotional intelligence

As a function of being better able to experience one's thoughts and emotions (particularly those that would usually be emotionally-charged), individuals may begin to experience less stress. The high frequency (97%) of the non-reactivity in the bootstrapped models indicate that is a variable that is consistently associated with the change in stress and less likely to be just a finding of this dataset. The latter provides confidence on the findings and consequently the need for dissemination.

CONCLUSION

Decreasing perceived stress is of vital importance for healthcare providers who are subject to highly stressful and demanding situations on a regular basis.(3) One way to decrease stress is through a mindfulness programs, such as MBSR. Given that many healthcare providers are unable to participate due to time constraints, alternative mindfulness based programs are needed.(12, 13) Our results offer practical implications, as non-reactivity to inner experience may be impacted by programs that aim to improve emotional intelligence, (14) that are now widely available.

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Highlights

Decreasing perceived stress is of vital importance for healthcare providers who are subject to highly stressful and demanding situations on a regular basis.(3) One way to decrease stress is through mindfulness.

Dr Benzo's report shed light on the mechanistic about how mindfulness practice decreases stress in health care workers and offers practical implications, as non-reactivity to inner experience, the main factor found to impact the benefit of stress after a 8-week mindfulness program may also be impacted by programs that aim to improve emotional intelligence, now widely available.

Table 1.

Means and effect sizes for baseline, post-intervention, and change scores for overall Qualities of Life and QoL subscales, the mindfulness facet non-reactivity to inner experience, and for perceived stress.

Variable	Baseline Mean (SD)	Post-Intervention (SD)	Change (PostBaseline) Mean (SD)	Cohen EffectSize: Number of SDs Changed
Overall QoL	7.2 (1.6)	8.2 (1.1)	0.9 (1.1) *	0.55
Mental QoL	7.0 (1.7)	8.0 (1.1)	1.1 (1.3) *	0.66
Physical QoL	6.5 (2.0)	7.5 (1.5)	0.9 (1.6) *	0.46
Emotional QoL	6.2 (1.7)	7.7 (1.2)	1.4 (1.6) *	0.80
Social QoL	5.9 (2.1)	7.3 (1.9)	1.2 (1.7) *	0.58
Spiritual QoL	6.2 (2.0)	7.8 (1.6)	1.6 (1.7) *	0.78
Non-reactivity	20.4 (4.2)	23.9 (4.3)	3.7 (5.0) *	0.88
Perceived Stress	18.0 (5.9)	13.1 (5.4)	-5.1 (5.1) *	-0.87

* indicates $p < 0.001$

- QoL = Quality of Life

- SD = standard deviation

Table 2.

Correlations between Stress Scores of the change in stress score, and Non-reactivity at baseline - represents change score in variables from baseline to post-MBSR divided by baseline standard deviation

Baseline Scores	No reactivity: Baseline (Correlation and p-value)
Perceived Stress Score : Pre MBSR	−0.5872 p<0.0001
Scores	Nonreactivity:
Perceived Stress Score	−0.5946 p<0.0001

Table 3.

The multivariate linear regression model is assessing whether a change in non-reactivity and change in overall QoL are predictive of the change in perceived stress following an MBSR course.

Dependent Variable	Significant Independent Variables	Coefficient	p-value	Percent of Time in Bootstrapped Samples	Model R-Square
Change in Perceived Stress	Change in No reactivity	−0.53	<0.0001	97%	0.4349
	Change in Overall QOL	−1.33	0.0037	32%	